Tempe Fire Department Policies and Procedures
Hose Maintenance and Testing
405.03D
Rev 3-12-97

PURPOSE

To establish standard guidelines for fire hose testing, maintenance, and documentation. These guidelines are in accordance with the recommendations of NFPA 1962.

POLICY

All fire hose on apparatus or in storage is to be tested annually as directed by the Support Services Battalion Chief. Shift commanders are responsible for coordination and control of all hose testing activities assigned to their respective shifts. A station test coordinator shall be assigned at each station on each shift to assist the shift commanders.

The Support Services Section is responsible for maintaining records on all fire hose (new, tested, damaged, and repaired). This will require good communications and cooperation from all stations to assure complete and accurate records.

All hose shall be numbered and a corresponding hose record inventory kept in the Support Services Section. Entries regarding all testing, damage, and repairs for each hose must be accurately maintained during its lifetime.

Approximately six months after/before hose testing, all hose carried on apparatus (with exception of preconnected attack lines) is to be removed and reloaded. This is an important procedure which improves reliability and prolongs the life of the hose by changing the position of bends in the hose on the apparatus.

Companies should remain in available status during testing. However, it may be necessary to obtain unavailable status during some portions of testing. Authorization must be received from the shift commander before testing in unavailable status.

PROCEDURE

HOSE TO BE TESTED

All fire hose 1½" in diameter and larger shall be pressure tested, this includes all 10 ft. sections. Assignment of testing reserve apparatus will be coordinated by the shift commander.

SERVICE TEST PRESSURE

Service test pressures for all hose used by the Tempe Fire Department are:

1½" through 3½"	-	300 psi for five minutes.
4" supply	-	200 psi for five minutes.

Any reference to TEST PRESSURE or PSI that may be stenciled on hose that exceed above pressures <u>are not</u> service test pressures! <u>No</u> attempt should be made to exceed the service test pressures listed above.

TEST LAYOUT

1. Maximum length for hose service test layout is 300 feet and all hose in a single layout must be of the same internal diameter and test pressure capacity. Due to its capacity, 3½" and 4" hose is not to be connected directly to apparatus discharges. A length of 2½" must be used as a "leader" from the discharge to the test layout and shall be counted as part of the layout length (50' of 2½" + 250' of 3½" equals 300').

2. Plan to position apparatus so that all hose to be tested will lie flat, straight, and level. If hose must be tested on a slight incline, the discharge end of the hose must be at the crest of the incline so the pump is at the lowest angle.

3. A water source from a hydrant must be secured. During all pumping procedures for hose testing, flowing of water through a slightly opened red line nozzle or a non-dedicated discharge drain valve must take place in order to keep the water temperature cool so as to avoid pump damage.

4. Test layouts shall be connected to pump discharge gates on the opposite side of the apparatus from where the pump operator will operate and all pre-connected hose (1½", 1¾", 2", and 2½") shall be disconnected from normal positions and connected to appropriate side discharges.

5. Prior to connecting hose to be tested, inspect all couplings to insure that coupling gaskets are in place, female swivels rotate freely, and there are no signs of coupling slippage (couplings "off center," unusually clean fabric next to couplings, or fabric threads broken or "curling" around coupling shanks). Also, visually inspect all hose for jacket tears, burn spots, cuts, severe abrasion, unusual lumps, bulges, or twists. Any 1½", 2", 2 ½" or 3½" hose showing unusual wear or signs of coupling slippage shall be sent to Station #4 and not field tested. Any 1¾" or 4" hose showing unusual wear or signs of coupling slippage shall be sent to the department warehouse.

6. After visual inspection, connect the hose layout and attach an appropriate nozzle with shutoff. Connections should be hand tight but firm. Tightening couplings with spanner wrenches prior to wetting may mask coupling gaskets in need of replacement.

PRESSURE TEST

1. Assure the test layout is straight and as level as possible and that the nozzle being used is closed.

2. Prior to pressurizing the test layout, position one person as a spotter with an unobstructed view of both the test layout and the pump operator. This person shall act as both "traffic control" for personnel entering the test area and as signaler to the pump operator for charging and shutting down the operation.

3. When the pump operator receives confirmation that the test is to begin, the pump shall be engaged and the proper discharge gate shall be "cracked" open only enough to allow gradual filling of the test layout. At no time shall pump pressure exceed 50 psi during the initial testings.

4. From initial pressurization through the remainder of the test, personnel entering the test layout area must approach from the left of the hose. Left is determined by facing the nozzle, with the pump to your back. Also, only personnel wearing helmets, face shields down, shall enter.

5. With test pressure maintained at a maximum 50 psi, the nozzle shall be slowly opened until all air is expelled, then slowly closed. Personnel shall then visually inspect the test layout for any signs of leaks, bulging, or coupling slippage.

6. While visually inspecting the hose each coupling shall be circled with chalk or felt pen where the jacket meets the coupling shank, so that any coupling slippage can be detected after testing.

7. If during initial testing leaks are detected around any coupling connections one attempt should be

made to tighten the coupling by using spanner wrenches. If the leak continues, the test shall be discontinued and the coupling gasket replaced. Should the coupling continue to leak after restarting the test, the affected hose length shall be removed from the test layout and marked "failed."

8. After circling the coupling shank and passing visual inspection, the test layout is ready for the service pressure test. All personnel should leave the immediate area and remain at least 15 feet to the left of the test layout until the test is completed.

9. Upon receiving confirmation from the spotter that the area is clear, the pump operator shall gradually increase pump pressure to the proper service test pressure. Discharge gate opening shall remain at a minimum and be manned so that immediate shutdown can be affected if hose rupture occurs.

10. Once test pressure is achieved, discharge gates shall be closed and the pump slowed to idle. Maintain test pressure in hose for five (5) minutes.

11. If during the service pressure test coupling leaks appear or suspicion develops that hose may be approaching failure, discontinue the test! Do not approach the test layout at pressures above 50 psi.

TEST COMPLETION

1. At 5 minutes, the pressure test is considered completed.

2. The pump operator shall bring the pump pressure up to within 100 psi of the test pressure and gradually open the discharge gate while reducing the pump to idle. At idle, the discharge should be fully open until pressure in the hose equalizes to the pump. The pump is then disengaged and the discharge closed.

3. Personnel in proper attire (gloves and helmets) shall slowly open the nozzle to drain the hose, inspect the hose and couplings for slippage or damage, then disconnect and drain the hose.

4. Test results and inventory information are to be recorded on the hose testing form and sent to the Support Services Section. Hose that fails any part of the test shall be "red tagged," supplying all pertinent information, and held in a separate location from "passed" hose until processed by the station test coordinator.

5. All hose shall be cleaned following testing. 1½", 2", 2½" and 3½" hose should be "air dried" prior to reloading or storage. 1¾", and 4" may be reloaded immediately after cleaning but as much excess water as possible should be removed. Cleaning can be accomplished with mild detergent, water, and brushing. Never use solvents or hydrocarbons for cleaning hose!

GENERAL HOSE CARE

1. The folds of all hose shall be changed twice yearly. The changing of hose folds may be incorporated with hose testing, minimum company evaluations, drills, and mechanical repairs.

2. Dirty fire hose shall be hosed down with water and swept with a broom to clean.

3. Use a mild detergent solution and scrub brush on fire hose that is oily or greasy. Do not use solvents or hydrocarbons.

4. Cleaned hose should be thoroughly rinsed and air dried. Supply hose and 1¾" attack hose may be reloaded "damp."

5. All couplings must pull straight out. Load so that couplings do not "flip" out of the hose bed.